

9/28/99

TIMBER HILL ALLOTMENT (0889)
KLAMATH FALLS RESOURCE AREA - KLAMATH FALLS, OREGON
RANGELAND HEALTH STANDARDS ASSESSMENT

The following assessment is based on an assortment of information collected over the last 25 years on the Timber Hill allotment. All of the basic information and raw data supporting the statements and conclusions in the following narrative, is at the Klamath Falls Resource Area Office. This includes the information, observations, and results of various rangeland monitoring studies and surveys; the field data from the recent Ecological Site Inventory (ESI) efforts; and the observations and professional opinions of resource specialists with field knowledge of the area. An explanation and description of the different monitoring studies, as well as references to the pertinent BLM Technical References, is found in the 1994 "Klamath Falls Resource Area Coordinated Monitoring and Evaluation Plan for Grazing Allotments", as revised.

One major fact in considering the conclusions of this assessment is that during the 1960's, the Timber Hill allotment's grazing use was reduced by 33%. This reduced the permitted use from 404 AUMs to the current 270 AUMs. This substantially reduced the potential for grazing induced resource problems. It is thought, however, that most of the historical grazing related resource damage dates back to the earlier portions of this century, prior to the grazing controls implemented through the Taylor Grazing Act in 1934.

STANDARD 1 - WATERSHED FUNCTION - UPLANDS - *This standard is being met on the allotment.* The indicators used to evaluate this standard are the results of various trend and condition studies; utilization studies; plant community composition and structure; and various other resource attributes observed during the recent ESI including Soil Surface Factor (SSF), which estimates the level of soil surface erosion, and ground cover components (plant litter, rock material, biotic crusts, bare ground).

TREND

Photo Trend: There is one long term photo trend study (TH-1) in the Timber Hill allotment. This "key area" is located about ½ mile south of Alkali Spring in the northern portion of the allotment; it is also only about 300-400 yards west of a dugout water hole. This location is close enough to several primary livestock waters, and is very forage attractive, so that if improvement in conditions occurs here then the rest of the allotment probably has fared even better. Originally established in 1975, this study has been read and/or photographed many times since then.

A comparison of the various years of photos as well a comparison between the initial plot reading and the 1991 plot reading (most recent actual plot data collection) shows that there has been a dramatic increase in vegetation (canopy) cover. Specifically, the total plant cover increased from 6% in 1975 to 40% in 1991. The dominant perennial grasses (single spike oatgrass, bottlebrush squirreltail, and Sandberg's bluegrass) increased from 4.1% cover to 18.5% over the same period.

Even considering variations in the way that different people record this type study information, this is a significant indicator of upward trend

These 3' x 3' plot pictures were also re-taken in 1994 and 1999, without the plot data collected. These photos show a continued dramatic increase in perennial grasses; particularly the oatgrass. There appears to be 2-3 times more oatgrass in 1999 as compared to 1994, because the previously dominant low sage plant has died. The recent consecutive wet years (1995-1998) have apparently favored the oatgrass (tolerant of seasonally saturated soils - i.e. vernal areas) at the expense of the low sagebrush, which is less tolerant of wet conditions.

In addition, the accompanying view photos of the study area show that the low sagebrush decreased in overall abundance dramatically during the late 1970's so that by the early to mid 1980's, low sagebrush was very widely scattered. A note on the 1977 plot data form states that there was a "heavy Aroga moth infestation" with "about 20% dead brush at present". Low sagebrush appears to have reached its low point in the early 1980's. The Aroga moth is a cyclical, sagebrush defoliating insect that is considered one of the most destructive insect pests of sagebrush in the western U.S. In recent years, low sagebrush in the area of the study plot appears to be increasing slightly, although still at depressed levels compared to the mid 1970's.

As a general summary, during the period since study initiation there has been a dramatic increase in perennial grasses and commensurate decrease in low sagebrush - both strong indicators of improved vegetation/ecological conditions. Observations throughout the allotment confirm broad upward trends and will be discussed later.

Frequency Trend: In addition, a "nested" frequency trend plot was established in 1996 near photo point TH-1. This study is not scheduled for rereading until 2001. Without two widely separated (by time) readings, there is nothing to compare at this point in time.

Observed Apparent Trend: This was a collateral observation as part of the ESI efforts. Although the field data has yet to be compiled and input into a data base where it could be accurately weighted by acres, a check of all the inventory worksheets and field maps shows that all of the allotment was estimated to have either static or upward trends. Specifically, of the 15 ESI field worksheets covering the allotment, 7 had estimated upward trends and 8 had static trend. No downward trends were noted.

Six of the upward trend areas were either late seral ("good" condition) or PNC ("excellent" condition). The remaining upward trend area rated as "high" mid seral (47% rating). This latter area is a Pine-Sedge ecological site with "recent underburn and thinning (<5 years)" activities, according to the inventory worksheet from 1997. Of the estimated 8 static trend areas, 1 was mid seral, 6 were late seral, and 1 was PNC - all in acceptable or better ecological condition. The one mid seral/static trend area was also a Pine-Sedge-Fescue ecological site with suppressed production due to underburning and the accompanying shrub component loss, which takes some years to restore in significant amounts. Even though the underburning can result in a temporary suppression of

ecological conditions, the overall mid to long term (5-10+ years) effects of the burning will be to gradually improve ecological conditions with the filling in of the shrubs and to some extent, the herbaceous layer. (However, this write-up area comprises or represents no more than 1% of the allotment.)

In general, the late seral and PNC areas are less likely to show distinct upward trends since they are already in an elevated ecological condition and have less “room” to improve. (See next section for more information on ESI.)

CONDITION

Key Area Condition: A site specific condition study was read in 1983 at the photo trend plot location (TH-1). This site was approximated and formally re-established/re-read in 1996 using the techniques used for the Ecological Site Inventory (ESI). This condition study allows for an initial quantitative assessment of the current vegetative conditions and establishes a baseline for future comparison on a specific key area. The two widely separated readings (1983 and 1996) cannot be compared precisely since the exact 1983 reading location isn’t known. In addition, the 1983 reading was a ocular estimate of the general area, whereas the 1996 reading was a clip and weight - “double sampling” - transect paralleling the frequency trend plot line. However, some comparison is possible using the available information and the most recent Gerber area specific Ecological Site Descriptions.

The 1983 reading rated the area as 29 - lower mid seral - based on the range site descriptions at that time (i.e. the 1965 “Very Cobbly Land” range site). However, re-rating the 1983 data, based on the revised (1999) “Shallow Stony 10-20” PZ” ecological site description for the Gerber area, gives a rating of 52 (or 57 if we allow 20% maximum for low sagebrush). This is in the lower end of the late seral stage/classification. The 1996 key area specific condition study gave a reading of 33% (38% if 20% is allowed for low sagebrush) - mid seral.. The 1996 reading was based on clip and weight calibrated estimates within 10 separate, 9.6 sq .ft. plots along the frequency trend transect line. These two readings make it appear that the condition trend is possibly downwards; a conclusion that the photo trend photos does not show, as noted earlier.

However, in 1997, the ESI survey Site Writeup Area (SWA) that includes this key area (SWA E049 - Writeup #DLE-97-030, which was read about 1/3 north of TH-1), had a reading of 72 - the high end of late seral. Overall, the most comparable ratings are the two broad ocular estimates of condition - 1983 (57) and 1997 (72). Comparison of these two shows that the condition trend seems to be at least static and probably upwards. This is consistent with the previously analyzed photo trend information. A re-reading of the 1996 study is scheduled to be done between 2001 and 2006. This second reading would provide information that the 1996 data can be directly compared to.

Ecological Site Inventory. During the 1997 and 1998 field seasons, the BLM performed an extensive ESI survey in the Gerber block. All the field data was collected for the Timber Hill allotment, providing a broader ecological “snapshot” of the area than just the key area condition.

ESI is primarily an upland vegetation oriented survey, although it does describe some meadow and other water dependent areas - of which there is little within the Timber Hill allotment. The data has not been fully compiled and entered into the data base/GIS.

However, analysis of the field data (using the vegetation write-ups and field maps and approximating on an acres weighted basis) does lead to some observations and conclusions. A primary conclusion is that virtually all of the Timber Hill allotment (97-98%) is in either Late Seral ("good" condition) or PNC ("excellent" condition). As noted earlier, these condition classes are indicative of fully functional upland ecological and watershed conditions. This includes all of the non-pine ecological sites in the allotment: "Juniper Claypan 16-20 PZ", "Shallow Stony 10-20 PZ", and "Juniper Claypan 12-16 PZ".

In addition, virtually all of the pine related ecological site areas - sites which dominant this allotment - are also in Late Seral, but have variably reduced production due to past timber harvest activities and recent prescribed burning. This underburning has concentrated on the pine areas and has reduced the understory shrub component significantly - a component that takes many years to regenerate. However, this underburning has also reduced the duff layer underneath the trees, allowing for a resurgence of the herbaceous community. In particular, bottlebrush squirreltail and western needlegrass - both desirable mid seral perennial grasses - are very common in most of the pine areas. All of this regeneration is occurring incrementally and the trend in most pine areas is definitely upwards. The primary pine sites are as follows: "Pine-Mahogany-Fescue 16-20 PZ", "Pine-Sedge-Fescue 16-24 PZ", and "Juniper-Pine-Bunchgrass 12-16 PZ".

One very significant ESI observation is that most ecological sites in the Gerber area have been and are continuing to experience increased densities of western juniper. These increases are probably primarily due to the combined effects of fire suppression, historic livestock grazing, and possibly past timber harvest activities in the Timber Hill (Brady Butte) area. The juniper increase has the future potential to dramatically effect ecological conditions more than it already has. This could include decreased forage production for wildlife and livestock, increased erosion potential due to diminished ground cover, mono-culture vegetation types that decrease wildlife diversity, decreased water availability, and other impacts. These observations are summarized as follows:

The spaces between the older junipers (150-1000+ years old) in the "old" juniper sites (Juniper Claypan 12-16" & Juniper Claypan 16-20") are being slowly filled in with much younger trees - way beyond what would be needed for replacement of the older trees as they die off (very slow!).

The shallow soil, non-juniper sites (Stony Claypan 14-20", Shallow Stony 10-20") are all experiencing varying increases in juniper, with the juniper generally increasing proportionally as soil depth increases. However, some of these areas are also seasonally (winter/spring) saturated - particularly the Shallow Stony 10-20" - which appears to suppress the juniper encroachment.

Most of the other, deeper soil and non-pine ecological sites, that should have juniper as a minor late seral/PNC component, are experiencing massive increases in juniper density. On

the Timber Hill allotment there is only one of these ecological sites: Juniper-Pine-Bunchgrass 12-16". Of particular concern is the fact that in some of these sites the mountain mahogany component is collapsing due to the juniper competition. These areas are probably the most important to consider for juniper reduction activities as they would have the highest beneficial results to wildlife.

The ponderosa pine areas (Pine-Mahogany-Fescue 16-20" and Pine-Sedge-Fescue sites) are also experiencing dramatic increases in juniper. This competition is placing pressure on the pine component of the community and is also causing the same problems with mountain mahogany as noted above.

UTILIZATION STUDIES

Utilization information has been collected periodically on this allotment since 1986 at five established utilization points. The utilization data from the established points has shown overall appropriate (moderate or less) average upland utilization, with the exception of 1986. In 1986, the grazing use was for a very extended season with relatively high livestock numbers - 250 head from 7/10 to 10/30 (929 AUMs which is almost 3½ times the active preference!). Not surprisingly, utilization ranged from 68% to 84% - mid heavy to low severe. Licensed use since that time has been at or below the 270 AUM active preference, with some years (1987 and 1991-93) being in total non-use. Even though a few use points in a couple years (since 1986) had a heavy use reading, there appears to be no chronically overused areas.

The utilization pattern mapping - done 3 separate years in 1994, 1995, and 1996 - has also confirmed consistently acceptable overall patterns of use throughout the allotment. Utilization averaged light in all 3 years - with a few very small areas of moderate utilization. These levels are all well within the KFRA ROD/RMP parameters and indicate that the existing grazing levels are appropriate to maintaining good vegetation conditions.

OTHER ESI RELATED OBSERVATIONS

Soil Surface Factor (SSF): As a collateral observation during the ESI, the SSF was estimated for each soils/vegetation site write-up area. Although the field data has not been compiled and input into a data base as noted above, a check of all the inventory worksheets and field maps shows that the majority of the allotments acreage (90%+ on an estimated acres weighted basis) is in either the "stable" or "slight" erosion condition classes. Specifically, 13 of the 15 ESI worksheets estimated the erosion in these two categories. These two lowest erosion classes imply generally stable conditions. The remaining areas (2 worksheets) rated out in the low end of the "moderate" erosion class and were both in "Shallow Stony 10-20 PZ" ecological site areas in the northern portion of the allotment. This ecological site is a minor vegetation community in the Timber Hill Allotment and both areas rated as late seral ("good" condition).

Cryptogamic Crust Rating: Another secondary observation made during the ESI was a general rating of the existing cryptogamic crusts (a ranking system recommended for ESI, by Jane Belnap,

a noted NPS expert on crusts) from between the lowest rating of 0 (“bare ground”) to the highest of 10 (“Cyanobacteria, big bumps, lots of lichens and mosses - >20%” (cover)). The average rating for the Timber Hill allotment was just under 4.5 - a moderate crust rating (calculated on a non-acres weighted basis for all but the “Pine-Sedge-Fescue” ecological site). This would be considered neither exceptional or unacceptable, but adequate, given the limited knowledge of these crusts and the long historical use of the allotment for cattle grazing. However, cryptobiotic crusts are not considered a naturally important soil surface feature in pine sites, of which Timber Hill is dominated by.

STANDARD 2 - WATERSHED FUNCTION - RIPARIAN/WETLAND AREAS - *This standard is being met on the allotment.* Timber Hill has no riparian or wetland areas on the public lands within the allotment. The closest would be the private lands on Adobe Flat (spike-rush meadows) or the Antelope Riparian pasture to the north of the allotment. This latter pasture is fenced separately from Timber Hill and is included as part of the neighboring Willow Valley allotment. Alkali Spring, located immediately south of the Antelope Riparian pasture fence in the Timber Hill allotment, is a “buried” spring source with a very small and insignificant sedge/grass patch supported by the overflow from the trough.

The KFRA ROD/RMP, (Appendix H - Grazing Management, page H-60), listed the following “Identified Resources Conflicts/Concerns” for the Timber Hill allotment: “Riparian or aquatic habitat is in less than good habitat condition.” The related “Management Objective” was to “Maintain and improve riparian or aquatic habitats in good or better habitat condition.” However, as noted above, there is neither riparian or aquatic habitat on the public lands within the allotment. This was a mistake and the “Conflict/Concern” and “Management Objective” should be removed from this allotment via plan maintenance.

STANDARD 3 - ECOLOGICAL PROCESSES - *This standard is being met on the allotment.*

The indicators used to evaluate this standard are the same as listed for Standard #1. All of the information presented for that Standard strongly indicates that the ecological processes of energy flow, nutrient cycling, and the hydrologic cycle are presently functioning at least adequately and probably fully on the allotment. The primary indicator would be the overall late seral to PNC conditions on virtually all of the allotment - public and private.

Grazing use on the allotment does not usually begin until July 1st each year. This deferred use date allows the key forage plants to complete most or all of their important life cycles each year and build root reserves for the next year. Even though the allotment is grazed each year, this deferral should be adequate to ensure stable to upward trending plant communities.

Although this Standard is currently met, there is one area of future concern. As noted in the condition discourse under Standard 1, most ecological sites in the Gerber area have been and are continuing to experience increased densities of western juniper. The juniper increase has the future

potential to dramatically effect ecological conditions. This could include decreased forage production for wildlife and livestock, increased erosion potential due to diminished ground cover, mono-culture vegetation types that decrease wildlife diversity, decreased water availability, and other impacts.

STANDARD 4 - WATER QUALITY - *This standard is being met on the allotment.* Indicators for this standard are the same as those listed for Standard #1. All the information presented for that standard - particularly the ESI information rating virtually all of the allotments vegetation communities as late seral/PNC - indicate that the allotment is a viable, properly functioning portion of the areas watershed.

There are no perennial waters on the public lands within this allotment besides a few dugout watering holes and Alkali Spring on the extreme north end. Additional stock watering is provided by water on privately owned lands on Adobe Flat.. There are no know water quality problems within the actual allotment boundaries.

STANDARD 5 - NATIVE, T&E, and LOCALLY IMPORTANT SPECIES - *This standard is being met on the allotment.* The indicators for this standard are various population studies and monitoring; the Ecological Site Inventory (ESI); the vegetation monitoring and studies noted in Standard #1.

WILDLIFE

The recent ESI has shown that the ecological conditions on the allotment are good to excellent. Specifically, 97-98% of the allotment is in either Late Seral or at Potential Natural Community (PNC). Common throughout the area are important wildlife forage and cover species like curl-leaf mountain-mahogany (with some problems as noted in the condition section of Standard 1), bitterbrush, serviceberry, chokecherry, as well as a myriad of native grasses and forbs. This is the strongest indication that the vegetation habitat for wildlife species is in good condition and not a significant limiting factor.

There is also no known or suspected significant forage competition problems between the major wildlife grazing species and livestock. The KFRA ROD/RMP and EIS allocated forage to wildlife as follows: 55 AUMs for deer, 0 AUMs for elk, and 20 AUMs for antelope. Post livestock grazing average utilization levels are consistently light, implying plentiful residual herbaceous forage for large wild herbivores. Utilization pattern mapping also shows significant areas of the allotment with little or no utilization; areas that are available for wildlife use. Utilization studies have not noted any competition for important browse species like bitterbrush and mountain mahogany.

One of the “Identified Resources Conflicts/Concerns” in the KFRA ROD/RMP (Appendix H - Grazing Management, page H-60) was the following: “No forage allocations for elk use in the allotment have been made”. The related “Management Objective” to meet this issue was - “Allocate

forage to meet elk forage demands.” However, the RMP process was and is the vehicle for making such an allocation, but was not utilized. In addition, the allotment has no records of significant use by elk to date, but the herd in the area is known to be expanding and growing. This allotment may become important as elk habitat and would be addressed in a future evaluation of the allotment and/or in the upcoming watershed analysis for the Gerber Block.

Probably the most significant threat to wildlife habitat is the previously discussed juniper encroachment into non-juniper ecological sites and increased density in recognized juniper sites. An inevitable result of increased juniper is a reduction of important understory shrub species - particularly big sagebrush and bitterbrush in this area. Decrease in the number and density of forb species is also a known side effect of increases in juniper. In addition, antelope prefer open areas and significantly avoid areas of dense juniper. If unchecked, these expected juniper increases would have a substantial negative impact on the major big games species in the area .

PLANTS

As noted previously the ecological conditions of the allotment, as determined by the ESI, are good to excellent. The dominance of functional vegetation communities implies that the potential for noxious weed invasion is suppressed since the conditions for weed spread are largely lacking. The ESI and ongoing rangeland monitoring studies have not revealed significant concentrations of medusahead, cheatgrass, or other annual bromes in this allotment.

Common species in this allotment include ponderosa pine (*Pinus ponderosa*), western juniper (*Juniperus occidentalis*), curl-leaf mountain mahogany (*Cercocarpus ledifolius*), low sage (*Artemisia arbuscula*), big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridentata*), common chokecherry (*Prunus virginiana*), rabbit-brush (*Chrysothamnus nauseosus*), snow brush (*Ceanothus velutinus*), squaw-carpet (*Ceanothus prostratus*), serviceberry (*Amelanchier alnifolia*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), squirreltail (*Elymus elymoides*) and western needlegrass (*Achnatherum occidentale* ssp. *occidentale*).

Special status species: No special status plant populations are known to occur in the allotment. Populations of Peck’s lomatium (*Lomatium peckianum*), a former Federal candidate for listing as threatened, are documented in the area. However, this species is no longer a Federal candidate for listing, nor is it on any list maintained by the Oregon Natural Heritage Program. It proved to be more abundant and widespread than originally thought.

A population of the long-bearded mariposa lily (*Calochortus longebarbatus* ssp. *longebarbatus*), a Bureau sensitive (BS) species, occurs about 2 miles away from the allotment near the Bear Valley Reservoir.

Noxious weeds: No noxious weed populations are known to occur within the allotment.

However, a population of Mediterranean sage (*Salvia atheopsis*) is established about 1.5 miles east at the Rock Creek bridge, and a population of St. John's wort (*Hypericum perforatum*) occurs about 2 miles west of the allotment along the Lost River just below Duncan Spring. Although these populations receive annual treatments, a potential exists for these noxious weed species to become established within the allotment because of the proximity of these sites.

Current Management and Recent Management Changes

The maximum permitted number of cattle that may be grazed is 213 head for a total of 270 AUMs. The permitted season of use is 6/21 to 7/31, although the typical licensed season of use is generally between about 7/1 to 8/15. This latter use period is within a reasonable deviation from that permitted and is due to the desires of the grazing permittee (Dennis Hitt). He generally comes on the Timber Hill allotment later than 6/21 due a later turn-out on the neighboring Willow Valley allotment, where he begins his public land grazing each year. Hitt winters his cows in California and does not bring them back to this area until mid-May.

According to the KFRA ROD/RMP/RPS, the Timber Hill allotment has 2,937 acres of public land and 760 acres of intermingled, unfenced private land. There is no exchange-of-use (EOU) for the intermingled private land, most if not all of which is owned by Jeld-Wen, Inc. Thus, the BLM permit of 270 AUMs is effectively spread over 3,697 acres; an important factor to consider when evaluating the monitoring data and understanding the generally light - and appropriate - use levels.

Although the allotment is grazed every year (at least since Hitt became the permittee in 1994), the turn-out location is rotated between the north end and the south end every year. This gives some "rotation" to the grazing use and a longer period of deferral to the opposite side from where that years turn-out takes place, i.e. if turn-out is on the north end one year, it takes a week or two for cows to make it to the south end. This is reversed the next year. Given the observed conditions on the allotment, this system seems to be a benign, to possibly positive, effect. In the long run it would be expected to have beneficial effects on the overall vegetation conditions.

Proposed Management Changes

No changes in grazing management are proposed because the current grazing management is either meeting the Standards, or is making significant progress towards meeting them - where grazing is known to be a resource issue.

Juniper reduction/control should be pursued in most ecological sites on this allotment. This needs to be seriously considered if we are to stop the deterioration of conditions on most of the ecological sites in the Gerber Block. Specifically, the following juniper removal or thinning should be considered as listed below (with dominant ecological sites in the Timber Hill allotment listed):

Virtually all juniper could be removed from the true non-juniper ecological sites (Shallow Stony 10-20", Stony Claypan 14-20"). These non-juniper sites should have 0-1% juniper. Most of the younger trees (<100 years) could be removed from the true "old" juniper sites (Juniper Claypan 12-16", Juniper Claypan 16-20").

Reductions to achieve a mix of age classes could be done in the other juniper potential sites (Juniper-Pine-Bunchgrass 12-16"). Juniper amounts should reflect amounts allowed in ecological site description.

Juniper should be brought closer to that described in the ecological site description on the ponderosa pine sites, with all age classes represented but as a minor component (Pine-Mahogany-Fescue 16-20", Pine-Sedge-Fescue).

One administrative recommendation would be to perform KFRA ROD/RMP "Plan Maintenance" to remove the previously mentioned elk allocation and riparian/aquatic habitat objectives from this allotment since neither are pertinent. If an allocation for elk is necessary, add it to this allotments section listing of "Other Forage Demands (AUMs)". The Timber Hill allotment is found in Appendix H - Grazing Management, page H-60.

Contributors/Team Members

Title

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Determination

- (X) Existing grazing management practices and/or levels of grazing use on the Timber Hill allotment promote achievement or significant progress towards the Oregon Standards for Rangeland Health and conform with the Guidelines for Livestock Grazing Management.
- () Existing grazing management practices and/or levels of grazing use on the Timber Hill allotment will require modification or change prior to the next grazing season to promote achievement of the Oregon Standards for Rangeland Health and conform with the Guidelines for Livestock Grazing Management.

/s./ Teresa A. Raml
Manager, Klamath Falls Resource Area

10/14/99
Date

